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10/779,505	02/13/2004	Qiwei He	3075.NWN	8910
7590 Cynthia L. Foulke NATIONAL STARCH AND CHEMICAL COMPANY 10 Finderne Avenue Bridgewater, NJ 08807-0500			EXAMINER MULLS, JEFFREY C	
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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* QIWEI HE  
and Michael G. Harwell

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Appeal 2010-003736  
Application 10/779,505  
Technology Center 1700

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Before TERRY J. OWENS, CATHERINE Q. TIMM, and  
MARK NAGUMO, *Administrative Patent Judges*.

Opinion for the Board filed by *Administrative Patent Judge* Nagumo.

Opinion Concurring-in-part filed by *Administrative Patent Judge* Timm.

NAGUMO, *Administrative Patent Judge*.

DECISION ON APPEAL<sup>1</sup>

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<sup>1</sup> Certain issues in this appeal are closely related to issues in the Appeal 2011-005552, which we also decide today.

A. Introduction<sup>2</sup>

Qiwei He and Michael G. Harwell (“He”) timely appeal under 35 U.S.C. § 134(a) from the final rejection<sup>3</sup> of claims 1-4 and 6-12, which are all of the pending claims. We have jurisdiction. 35 U.S.C. § 6. We AFFIRM.

The subject matter on appeal relates to hot melt adhesives said to be useful as “elastic attachment adhesives.” The 505 Specification teaches that adhesives suitable for attachment to elastic substrates “exhibit[] good creep performance when used as an elastic attachment adhesive in the manufacture of articles comprising an elastic region.” (Spec. 2, ll. 1-2.) A measure of creep performance is provided by the “% creep,” which is defined as the difference between the starting length and the final length, relative to the starting length, of an elastic filament adhered initially in the stretched condition between two nonwoven sheets, that is then allowed to relax for a 4-hour period at 100°F. (*Id.* at 12, last two paras.) An average % creep of 4.1 % is said to be “good.” (*Id.* at 13, Table 1 [the working example].) The 505 Specification also indicates that elastic attachment adhesives have a viscosity at 300°F (approximately 150°C) of about 7300 centipoise (“cP”). (*Id.*) Good creep performance is said to require an adhesive with excellent toughness. (*Id.* at 2, last para.)

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<sup>2</sup> Application 10/779,505, *Elastic Attachment Adhesive Containing Radial Block Copolymer*, filed 13 February 2004. The specification is referred to as the “505 Specification,” and is cited as “Spec.” The real party in interest is listed as Henkel AG & Co., KGaA (Appeal Brief, filed 10 June 2009 (“Br.”), 1.)

<sup>3</sup> Office action mailed 10 September 2008

Representative Claim 1 reads:

1. A hot melt adhesive comprising  
a radial block copolymer component comprising  
 $(\text{PS-PI-PB})_n\text{X}$   
wherein PS is polystyrene, PI is polyisoprene and  
PB is polybutadiene, X is the residue of a  
multifunctional coupling agent used in the  
production of the radial block copolymer, and n is  
equal to or greater than 3 and represents the  
number of PS-PI-PB arms appended to X,  
said radial block copolymer having a styrene  
content of from 25 wt % to about 50 wt %,  
a linear triblock copolymer, and  
a tackifying resin,  
wherein, based on the weight of the adhesive composition,  
the radial block copolymer component is present in  
amounts of from 15 wt % to about 35 wt %,  
the linear polymer is present in amounts up to  
about 20 wt %,  
the tackifying resin is present in amounts of from  
about 30 to about 70 wt %,   
said adhesive being suitable for use as an elastic  
attachment adhesive.

(Claims App., Br. 10; indentation and paragraphing added.)

Claim 2 depends from claim 1 and limits the number average  
molecular weight of each arm of the radial block copolymer.

Claim 3 reads:

3. The adhesive of claim 2 wherein the radial block  
copolymer component has a SIB percentage of less than  
about 25 %, based on the amount of the radial block  
copolymer component.

(Claims App., Br. 10.)

The Examiner has maintained the following grounds of rejection:<sup>4,5</sup>

- A. Claims 3 and 4 stand rejected under 35 U.S.C. §112(2).
- B. Claims 1-4 and 6-12 stand rejected under 35 U.S.C. § 102(b) in view of Diehl.<sup>6</sup>
- C. Claims 1, 2, and 6-9 stand rejected under 35 U.S.C. § 103(a) in view of Lechat.<sup>7</sup>
- D. Claims 1-4 and 6-9 stand rejected under 35 U.S.C. § 103(a) in view of Kueppers.<sup>8</sup>

B. Discussion

Findings of fact throughout this Opinion are supported by a preponderance of the evidence of record.

He identifies related appeals in two applications,<sup>9</sup> which also were filed on 13 February 2004, by the same inventors, and assigned to Henkel.

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<sup>4</sup> Examiner's Answer mailed 3 September 2009 ("Ans.").

<sup>5</sup> The Examiner has withdrawn rejections of claims 1-4 and 6-9 as anticipated by Asahara (U.S. Patent 5,532,319); rejections of claims 10 and 11 in view of Kueppers, and a provisional obviousness-type double patenting rejection in view of 10/779,420 (now U.S. Patent 7,655,720). (Ans. 2, para. (6).)

<sup>6</sup> Charles F. Diehl et al., *Radial Block Copolymers Containing Butadiene Endblock*, U.S. Patent 5,292,819 (1994).

<sup>7</sup> Jacques Bernard Lechat et al., *Radial Block Copolymers and Adhesives Based Thereon with Improved Die-Cutting Performance*, U.S. Patent Application Publication 2005/0020773 A1 (2005), based on an international application filed 18 September 2002.

<sup>8</sup> Michelle C. Kueppers, *Low Application Temperature Hot Melt with Excellent Heat and Cold Resistance*, U.S. Patent 5,939,483 (1999).

The appeal in 10/779,420 was mooted by allowance<sup>10</sup> after the appeal brief was filed. We decide Appeal 2011-005552 in application 10/779,420 today in view of a closely related issue regarding prior art reference Kueppers.

The claims of the three applications are directed towards elastic attachment adhesives. The main difference is the identity and the amount of the radial block copolymer, as summarized in the following table:

<u>Application</u>	<u>radial block</u>	<u>relative amount</u>
420	(PS-PI-PB) <sub>n</sub> X	< 15 wt %
492	(PS-PI) <sub>n</sub> X	< 15 wt %
505	(PS-PI-PB) <sub>n</sub> X	~(15 - 35) wt %

where PS is polystyrene, PI is polyisoprene, and PB is polybutadiene.

The Examiner holds claim 3 (and claim 4) to be indefinite because they recite “that the radial copolymer is part diblock despite the fact that a diblock copolymer is not a radial block copolymer as the term is normally used in the art nor as defined by the structure of claim 1.” (Ans. 3; FR 2.) The Examiner also holds that “it is not clear what the percentage of claim 3 is based on since this is unstated.” (*Id.*)

This rejection is without merit. First, the Examiner appears to be referring to the original claim, not claim 3 as amended on 2 June 2008. Second, as He explains, both the 505 Specification and Lechat explain that radial block copolymers have various di-block percentages due to less than 100% coupling efficiencies. (Br. 4; *see also* Spec. 3, 2d full para.; Lechat 5,

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<sup>9</sup> Related Proceedings App., Br. 14.

<sup>10</sup> U.S. Patent 7,655,720 B2, issued 2 February 2010.

paras. [0052] and [0064].) Moreover, the Examiner does not explain why basing the percentages on the amount of radial block component leaves a problem for the ordinary adhesives formulator. We REVERSE the rejection for indefiniteness.

He argues (Br. 6) that the rejection in view of Diehl fails for lack of disclosure of the presence of a linear [tri]block copolymer in Examples 1-4, on which the Examiner relies (Ans. 5.) The Examiner argues that the coupling reaction taught by Diehl would result in a mixture of partially and fully coupled materials that would be expected to contain linear triblock SBS copolymers as well as four-armed radial block copolymers. (Ans., para. bridging 6-7.) The Examiner's argument is supported by Diehl's description of Examples 1 through 4, on which the Examiner relies. Diehl reports the step-wise anionic polymerization of styrene, followed by isoprene, followed by butadiene. Size exclusion chromatography of the coupled polymer revealed two peaks, one corresponding to the radial block, and the other corresponding to a "diblock" of polystyrene and "polydiene," present in amounts of 22%, 14%, 13%, and 13% of the total amount of polymer, for Examples 1-4, respectively. (Diehl, col. 9, l. 44, through col. 11, l. 36.) Each of these values, including the 22% reported in Example 1, meets the limitation of "about 20 wt%" recited in claim 1. The term "about" indicates some variability, and He has not come forward with any credible evidence or argument that 22 wt% differs substantially from 20 wt%. As He presents no other arguments against anticipation by Diehl, we conclude that He has failed to demonstrate harmful error in the Examiner's rejection.

The Examiner finds that Lechat discloses adhesive compositions that overlap the ranges of components recited in the appealed claims. (Ans. 4.) The Examiner finds further that Lechat does not provide any examples of compositions meeting all of the limitations, but argues that it would have been obvious to arrive at such compositions “by selecting from the various disclosures of the reference . . . in the expectation of adequate results.” (*Id.*)

He objects that the preferred amounts of styrene and di-block material disclosed by Lechat are not within the scope of the appealed claims (Br. 5, 1st para.), and concludes that “[a] polymer of the type disclosed for use in appellants’ claimed hot melt adhesive would not be [sic: would not have been] obvious from the disclosure of Lechat” (*id.*). He objects further that Lechat does not disclose hot melt adhesives within the scope of the appealed claims. (*Id.*, 2d para.) He also states that the pressure sensitive adhesive compositions disclosed by Lechat “would not be suitable for use as an elastic attachment adhesive.” (*Id.*, 3d para.)

He’s arguments are not persuasive of harmful error in the Examiner’s rejection. The failure of Lechat to disclose examples that meet the limitations of the claims is of no moment in an obviousness rejection. He has not come forward with any credible evidence or argument demonstrating harmful error in the Examiner’s argument that compositions within the scope of Lechat’s disclosure would have been obvious. In particular, He’s unsupported statement that adhesives disclosed by Lechat would not be suitable for elastic attachment adhesives is mere attorney argument that we need not and do not credit on the present record.



Regarding He's references to the "diblock" copolymers disclosed by Lechat (Br. 5), we note that the radial block copolymers described in Examples A and B (Lechat 2, paras. [0113]-[0116]) are prepared by sequential anionic polymerization of styrene, isoprene, and butadiene, followed by the addition of  $\text{SiCl}_4$  as the radial block coupling agent. (*Id.* at [0113] and [0115].) The arms of the radial block are thus reasonably SIB triblock copolymers, and the uncoupled "diblock" copolymers are SIB triblocks. It has not escaped our notice that the 505 Specification indicates that ABA triblock copolymers in which the A end-blocks are nonelastomeric are preferred. (Spec. 4.) We shall not, however, read limitations from the specification into the claims: nor are we inclined to advance possible arguments for patentability that the appellants have not advanced themselves.

We conclude that He has not shown harmful error in the rejection for obviousness based on Lechat.

Finally, He argues that Kueppers would not have motivated the artisan to make the adhesives covered by the appealed claims, pointing to the packaging applications and the low viscosities of the exemplified adhesives. (Br. 6-7.) Based solely on this limited response, which is not supported by further explanation or citation to credible evidence of record, we would not be inclined to find harmful error demonstrated regarding the Examiner's reliance on Kueppers. However, in Appeal 2010-005552 in the 420 Application, we find that He, in that case, demonstrates by the preponderance of the evidence that the hot melt adhesives described and

suggested by Kueppers do not possess properties corresponding to an elastic attachment adhesive.

More particularly, Kueppers seeks to provide a low application temperature hot melt adhesive that exhibits excellent heat and cold resistance. (Kueppers col. 1, ll. 10-13.) According to Kueppers, “[t]he substrates to be bonded include virgin and recycled kraft, high and low density kraft, chipboard, and various types of treated and coated kraft and chipboard.” (*Id.* at ll. 18-22.) Moreover, Kueppers teaches that the hot melt adhesive must exhibit full fiber tearing bonds. In Kueppers’ words, “[t]his means that all the fiber must be removed from the substrate along the entire length of the adhesive bead when the bond is separated by hand.” (*Id.* at ll. 23-25.) Neither the rigid and nonelastic substrates for which Kueppers provides adhesives, nor the adhesive properties described by Kueppers as being suitable for bonding such substrates, suggest, on their face, that such adhesives have properties that would make them useful for bonding elastic substrates. Nor has the Examiner come forward with any credible evidence or argument that persons skilled in the art would have considered Kueppers’ adhesives to be useful for such purposes. In light of the parallel treatment in Kueppers of adhesives based on (PS-PI-PB)<sub>n</sub>X and (PS-PI)<sub>n</sub>X radial block copolymers, we conclude that the same conclusion should apply in this case. We therefore REVERSE the obviousness rejection based on Kueppers.

C     Order

We REVERSE the rejection of claims 3 and 4 under  
35 U.S.C. §112(2).

We AFFIRM the rejection of claims 1-4 and 6-12 under  
35 U.S.C. § 102(b) in view of Diehl.

We AFFIRM the rejection of claims 1, 2, and 6-9 under  
35 U.S.C. § 103(a) in view of Lechat.

We REVERSE the rejection of claims 1-4 and 6-9 under  
35 U.S.C. § 103(a) in view of Kueppers.

No time period for taking any subsequent action in connection with  
this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED

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TIMM, *Administrative Patent Judge*.

With respect to the rejection of claims 1-4 and 6-9 under 35 U.S.C. § 103(a) over Kueppers, I conclude that the weight of the evidence supports the position of the Examiner for the reasons I discuss in the Decision in Appeal No. 2011-005552 in Serial No. 10/779,492. Simply stated, the claims limitation “suitable for use as an elastic attachment adhesive” does not reasonably appear to distinguish the claimed adhesives from Kueppers’ adhesives. Therefore, I would sustain the Examiner’s rejection over Kueppers.